UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/613,177	07/10/00	SAMPATH K	CIBT-P02-540

EXAMINER	
FREDMAN, J	
ART UNIT	**PAPER NUMBER**
1655	10

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HM12/1102

DATE MAILED: 11/02/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/613,177	Sampath et al
Examiner	**Art Unit**
Jeffrey Fredman	1655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *three* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Oct 1, 2001*.

2a) ☒ This action is **FINAL.** 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-10, 13-33, and 36-44* is/are pending in the application.

4a) Of the above, claim(s) *14, 16-29, and 37-42* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-10, 13, 15, 30-33, 36, 43, and 44* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

Double Patenting

1. Claims 1-10, 13, 15, 30-33, 36, 43 and 44are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 5,834,188. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims are a species of the genus of the current claims, where the method of claim 2 of the U.S Patent is drawn to a species of screening using OP-1. The species anticipates the genus claim and renders the genus claim obvious.

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 30-33 and 43 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

All of these claims encompass nucleic acids which are different from those disclosed in the specific SEQ ID Nos, which include variants for which no written description is provided in the specification. Specifically, the elected claims now recite "species or allelic variants", "truncated amino acid sequences", "analog thereof" and "biosynthetic or recombinant variants", each of which statements encompasses nucleic acids not disclosed.

It is noted in the recently decided case The Regents of the University of California v. Eli Lilly and Co. 43 USPQ2d 1398 (Fed. Cir. 1997) decision by the CAFC that

> "In claims to genetic material, however, a generic statement such as "vertebrate insulin cDNA" or "mammalian insulin cDNA," without more, is not an adequate written description of the genus because it does not distinguish the claimed genus from others, except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus. A definition by function, as we have previously indicated, does not suffice to define the genus because it is only an indication of what the gene does, rather than what it is. See Fiers, 984 F.2d at 1169- 71, 25 USPQ2d at 1605- 06 (discussing Amgen). It is only a definition of a useful result rather than a definition of what achieves that result. Many such genes may achieve that result. The description requirement of the patent statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention. See In re Wilder, 736 F.2d 1516, 1521, 222 USPQ 369, 372- 73 (Fed. Cir.

> 1984) (affirming rejection because the specification does "little more than outlin[e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate."). Accordingly, naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material. "
>
> It is noted that in Fiers v. Sugano (25 USPQ2d, 1601), the Fed. Cir. concluded that
>
> "...if inventor is unable to envision detailed chemical structure of DNA sequence coding for specific protein, as well as method of obtaining it, then conception is not achieved until reduction to practice has occurred, that is, until after gene has been isolated...conception of any chemical substance, requires definition of that substance other than by its functional utility."

In the instant application, a certain subset of specific SEQ ID NOs is described. Also, in Vas-Cath Inc. v. Mahurkar (19 USPQ2d 1111, CAFC 1991), it was concluded that:

> "...applicant must also convey, with reasonable clarity to those skilled in art, that applicant, as of filing date sought, was in possession of invention, with invention being, for purposes of "written description" inquiry, whatever is presently claimed."

In the application at the time of filing, there is no record or description which would demonstrate conception of any nucleic acids which are "species or allelic variants", "truncated amino acid sequences", "analog thereof" and "biosynthetic or recombinant variants" of the particular SEQ ID NO:s. Therefore, the claims fail to meet the written description requirement by encompassing sequences which are not described in the specification.

5. Claims 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is vague and indefinite what is meant by "the protein has DNA also has binding properties" in claim 44. This phrase is simply unclear. How does a protein "has DNA"?

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foulkes et al (U.S. Patent 5,863,733) in view of Wobus et al (Differentiation (1991) 48:173-182).

Foulkes teaches a method for identifying a compound that induces a biological effect (column 73, lines 40-43), comprising a) providing a test cell comprising a DNA defining a transcription activating element operatively linked to a reporter gene encoding a detectable gene product, which, when present in a responsive cell contacted with a comopund serves to induce

transcription of said reporter gene (column 73, lines 44-58), b) exposing said test cell to a candidate compound (column 73, line 59 to column 74, line 5), c) detecting expression of said detectable gene product where the expression indicates the ability of the compound to induce the biologic effect (column 73, line 59 to column 74, line 5). Foulkes expressly teaches producing larger amounts of desirable compounds for use in therapy (column 31).

Foulkes does not teach a motivation to apply the method to differentiated mammalian tissue to identify chronotropic drugs which induce differentiation.

Wobus teaches a motivation to apply the method of Foulkes to the identification of compounds to study differentiation (page 173, column 1).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to apply the method of Foulkes to the screening of compounds which induce differentiated tissue from pluripotent cells as taught by Wobus since Wobus states "The cellular system described may be useful as an in vitro assay for toxicological investigations of chronotropic drugs and a model system for studying committment and cellular differentiation in vitro." (Page 173, column 1). Thus, an ordinary practitioner would have been motivated by Wobus to screen for compounds which are chronotropic, (ie which affect differentiation) and expressly motivated to screen for drugs involved in differentiation.

8. Claims 1-3, 6, 9, 13, 30-33, 36, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foulkes et al (U.S. Patent 5,863,733) in view of Wobus et al (Differentiation (1991) 48:173-182) and further in view of Nadal-Ginard (WO 94/18239).

Foulkes teaches a method for identifying a compound that induces a biological effect (column 73, lines 40-43), comprising a) providing a test cell comprising a DNA defining a transcription activating element operatively linked to a reporter gene encoding a detectable gene product, which, when present in a responsive cell contacted with a comopund serves to induce transcription of said reporter gene (column 73, lines 44-58), b) exposing said test cell to a candidate compound (column 73, line 59 to column 74, line 5), c) detecting expression of said detectable gene product where the expression indicates the ability of the compound to induce the biologic effect (column 73, line 59 to column 74, line 5). Foulkes expressly teaches producing larger amounts of desirable compounds for use in therapy (column 31). Foulkes teaches the use of vectors with AP-1 sites such as the CSF-1 promoter which comprises an AP-1 site (column 52, lines 35-60).

Wobus teaches a motivation to apply the method of Foulkes to the identification of compounds to study differentiation (page 173, column 1).

Foulkes does not teach the use of the MEF-2 or AP-1 elements, which are functional in muscle cells.

Nadal-Ginard teaches screening for agents which either enhance of decrease the interaction of MEF2 transcription factors as well as MyoD and MASH transcription factors (abstract).

Further, the sequences of Foulkes, Wobus or Nadal-Ginard are all "variants" of the nucleotides disclosed in claim 30 and meet this limitation.

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to apply the method of Foulkes in view of Wobus to the screening of MEF2 related compounds for the study of differentiated tissue as taught by Nadal-Ginard since Nadal-Ginard states "The agents useful in the invention either enhance or decrease the interaction between a pocket protein, eg retinoblastoma protein and a tissue specific trasncription factor, eg members of the MyoD, MEF2 or MASH family of transcription factors" (abstract)." Nadal-Ginard further notes that "Applicant's discovery provides the basis for screening therapeutic agents useful for regulating the switch between the cell's growth phase and a terminally differentiated state (page 4, lines 18-20)". Thus, an ordinary practitioner would have been motivated by Nadal-Ginard to screen for compounds which are involved in differentiation using the MEF2 transcription factor sites in view of Nadal-Ginard's express motivation to use these enzymes in screening between differentiation and growth.

Response to Arguments

9. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Fredman, Ph.D. whose telephone number is (703) 308-6568.

The examiner is normally in the office between the hours of 6:30 a.m. and 4:00 p.m., and telephone calls either in the early morning or the afternoon are most likely to find the examiner in the office.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones, can be reached on (703) 308-1152.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Technology Center 1600 by facsimile transmission via the P.T.O. Fax Center located in Crystal Mall 1. The CM1 Fax Center numbers for Technology Center 1600 are either (703) 305-3014 or (703) 308-4242. Please note that the faxing of such papers must conform with the Notice to Comply published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Jeffrey Fredman
Primary Patent Examiner
Art Unit 1655

November 1, 2001